

(b) conducting at least one separation of effluent obtained at the end of step a1 into at least three fractions: a light fraction comprising olefins, and from which substantially all of the sulfur has been removed, a heavy fraction in which most of the sulfur compounds initially comprised in the gasoline feedstock is concentrated, and at least one intermediate fraction having a depleted content of olefins and aromatics,

(c1) conducting at least one treatment of the heavy fraction separated at step (b) on a catalyst enabling the sulfur compounds to be at least partially decomposed or hydrogenated,

C1 (c2) treating effluent from step (c1) on a catalyst so as to decompose the sulfur compounds, and

(d) conducting at least one step to remove the sulfur and nitrogen from at least one intermediate fraction,

wherein a part of said at least one intermediate fraction obtained from step (b) is mixed with the heavy fraction prior to step (c1).

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28. A process according to claim 29, further comprising increasing the molecular weight of sulfur compounds present in at least one of the feedstock or the effluent from the selective hydrogenation.

C2 29. A process for producing gasoline with a low sulfur content from a gasoline feedstock comprising:

conducting at least one selective hydrogenation of the diolefins and acetylenic compounds comprised in the feedstock; separating an effluent of the at least one selective hydrogenation into at least three fractions; and

conducting at least one treatment of one of the fractions separated on a catalyst enabling the sulfur compounds to be at least partially decomposed or hydrogenated.

30. A process for producing gasoline with a low sulfur content from a gasoline feedstock comprising:

conducting at least one selective hydrogenation of the diolefins and acetylenic compounds comprised in the feedstock; separating an effluent of the at least one selective hydrogenation into at least three fractions; and

C2 removing the sulfur and nitrogen from at least one of the separated fractions.

31. A process according to claim 29, wherein the fractions comprise a light fraction, an intermediate fraction, and a heavy fraction.--

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Please add the following new claims:

C3 --32. A process according to claim 30, further comprising increasing the molecular weight of sulfur compounds present in at least one of the feedstock or the effluent from the selective hydrogenation.

33. A process according to claim 30, wherein the fractions comprise a light fraction, an intermediate fraction, and a heavy fraction.--

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